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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/688,831	10/17/2003	Sang Kyeong Yun	02598/100G366-US2	2392
7590 03/21/2006 DARBY & DARBY P.C. 805 Third Avenue New York, NY 10022			EXAMINER TUGBANG, ANTHONY D	
			ART UNIT 3729	PAPER NUMBER
DATE MAILED: 03/21/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 10/688,831	Applicant(s) YUN ET AL.	
	Examiner A. Dexter Tugbang	Art Unit 3729	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 26-30 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 26-30 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 09/444,128.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>10/17/03</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Priority

1. While the specification (on page 1 after the Title) does contain a reference to parent application no. 09/444,128, the reference does not include the current status, e.g. that it matured into U.S. Patent 6,662,418. The specification should be amended to include the current status of the parent application.

Specification

2. Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:

- (1) if a machine or apparatus, its organization and operation;
- (2) if an article, its method of making;
- (3) if a chemical compound, its identity and use;
- (4) if a mixture, its ingredients;
- (5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

3. Applicant is reminded of the proper language and format for an abstract of the disclosure.

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The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

4. The abstract of the disclosure is objected to because the content does not appear to be directed to the claimed invention of a process of making (e.g. the process steps recited in Claim 26). Furthermore, the length of the abstract appears to be greater than 150 words.

Correction is required. See MPEP § 608.01(b).

Claim Objections

5. Claims 26, 27, 29 and 30 are objected to because of the following informalities: the claim language is awkwardly worded and the suggestions below are to correct mere informalities with the language, e.g. grammar.

In Claim 26, "it" (line 8) should be changed to --said piezoelectric/electrostrictive layer--.

In Claim 27, "produced" (line 2) should be removed.

In Claim 29, --one of-- should be inserted before "a ceramic" (line 3); "and a ceramic sol...said ceramic powder" (lines 6-7) should be removed; "the material" (line 9) should be changed to --a material--; and "and a ceramic sol...said ceramic powder" (lines 10-12) should be removed.

In Claim 30, "a mixture with metal" should be replaced with --the mixture with the metal--.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 26, 27, 28 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Fujii et al 5,868,948, Kosaka et al 6,207,268 and Rodriguez 2,533,140.

Fujii discloses a method for manufacturing a device comprising: providing a metal substrate (e.g. 102 in Fig. 2); forming a piezoelectric/electrostrictive layer 103 on the metal substrate using a mixture; masking and exposing the piezoelectric/electrostrictive layer and an upper electrode with a mask (e.g. photoresist 105) to pattern the piezoelectric/electrostrictive layer and the upper electrode; and forming an upper electrode 104 on the piezoelectric/electrostrictive layer using a mixture of a metal.

Fujii does not appear to mention that the piezoelectric/electrostrictive layer uses a specific mixture of a photosensitive resin and a piezoelectric/electrostrictive ceramic and that the upper electrode layer uses a specific mixture of a photosensitive resin with the metal.

Kosaka et al suggests that upper electrode can include mixtures of a photosensitive resin with a metal (col. 18, lines 19+) to benefit from such properties as superior smoothness and high yields (col. 2, lines 40-47).

Regarding Claim(s) 30, the photosensitive resin of Kosaka can be considered to be a conductive UV adhesive to the extent that the resin provides laminating characteristics of a laminate (col. 2, lines 45-47).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of Fujii by forming the upper electrode with a mixture of a photosensitive resin and a metal, as taught by Kosaka, for the advantages of having such properties of superior smoothness and high yields.

Rodriguez teaches that a piezoelectric/electrostrictive layer can be formed with a mixture of conventional materials, such as a photosensitive resin and a ceramic, for the advantage of at least providing remanent piezoelectric properties within the piezoelectric/electrostrictive layer.

Regarding Claim(s) 27, Rodriguez further teaches that the ceramic device is thermally treated by cooling from 2500 °F (= 1371 °C) to atmospheric conditions, which would overlap the claimed range of 200-500 °C.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of Fujii by forming the piezoelectric/electrostrictive layer with the mixture of a photosensitive resin and a ceramic, as taught by Rodriguez, to positively provide remanent piezoelectric effects in the piezoelectric/electrostrictive layer.

Regarding Claim(s) 28, it would have been an obvious matter of design choice to choose any desired material of the metal substrate since the applicant(s) have not disclosed that the claimed material of either nickel or stainless steel, solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with the metal

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material taught by Fujii. Furthermore, the metal material of the substrate has no impact on the method steps.

8. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over the prior art above, as applied to claim 26, and further in view of Lubitz et al 5,425,889.

Fujii, as modified by Kosaka and Rodriguez, disclose the claimed manufacturing method as relied upon above. The modified Fujii method does not teach a sol solution with a photosensitive complexing agent.

Lubitz teaches that piezoelectric/electrostrictive layers can include ceramics with a sol solution and various photosensitive complexing agents, as these conventional materials in a mixture simply manufacturing techniques (col. 5, lines 52-60).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of Fujii by using a mixture of a sol solution with a photosensitive complexing agent, as taught by Lubitz, to advantageously simply manufacturing techniques.

Conclusion

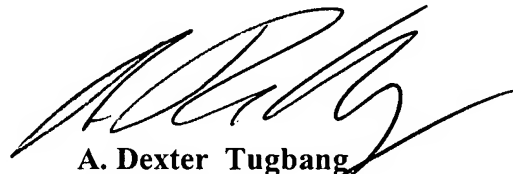
9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to A. Dexter Tugbang whose telephone number is 571-272-4570. The examiner can normally be reached on Monday - Friday 8:30 am - 5:00 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on 571-272-4690. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



A. Dexter Tugbang
Primary Examiner
Art Unit 3729

March 15, 2006